HydroQual, Inc.

Environmental Engineers and Scientists

REC'D 6-14-94
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June 13, 1994

6-16-94 @ 2:00 CONFERENCE CALL W/ CIBA TO DISCUSS

Mr. Frank Battaglia
USEPA Region I
Waste Management Building
90 Canal Street
Boston, Massachusetts 02114

CIBA0010

Dear Mr. Battaglia:

Reviews of recently obtained Phase II-Round 1 Release Characterization data and results from sediment transport modeling of the Pawtuxet River have provided the basis for proposing three changes to the sediment sampling plan to support chemical fate modeling. The three changes are to 1) eliminate sediment sampling for silver, 2) limit the number of sediment samples that will be analyzed for chlorobenzene, toluene, and naphthalene, and 3) change the depth of sediment cores to 20 centimeters (from 40 centimeters). The rational for these proposed changes is presented below.

OK ✓ 1) Eliminate Sediment Sampling for Silver

Phase II-Round 1 Release Characterization sediment silver data are shown on Figure 1, along with Phase I data. This recent sampling program resulted in only three detected concentrations of silver from 68 samples. Both Phase I and Phase II data indicate detected concentrations in only a limited portion of the river, with non-detected results from both upstream and downstream samples.

Silver was originally added to the list of chemicals to be sampled based on one water column concentration above both state and USEPA water quality criteria. Water column data collected between May and July 1992 (Figure 2) indicate that concentrations approximately 2 miles upstream of the Ciba Geigy facility are generally above water quality criteria. In addition, no spatial gradient through the Facility reach is observed. It is therefore recommended that analyses for silver in sediment samples should not be performed and that modeling the fate of silver should not be undertaken by Ciba Geigy.

OK, BUT SHOULD WE BE LOOKING FOR ANOTHER METAL? (TO REPRESENT THE METAL FAMILY) FOR MODELING PURPOSES * (-ZINC-) *

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OK ✓ 2) Limit the Number of Sediment Samples Analyzed for Chlorobenzene, Toluene, and Naphthalene

Phase I and II release characterization data indicate peak concentrations of chlorobenzene, toluene, and naphthalene in river sediments near the Production area. Because of the relatively low partitioning of chlorobenzene, toluene, and naphthalene, these substances would not be expected to persist after onsite activities are undertaken to control the transport of these chemicals to the river. Preliminary modeling analyses support the expectation that concentrations of these substances would decrease quickly after control of sources. NEED TO VERIFY ANALYTICALLY AT A LATER DATE *

The proposed sediment sampling plan to support fate modeling includes stations in each depositional area (defined on the basis of sediment characteristics and sediment transport modeling). Stations in depositional areas would indicate if chemicals sorbed to solids were settling into areas downstream of sources. This would not be expected, however, for low partitioning chemicals. Most of the depositional areas (Figure 3, shaded areas) downstream of the Production area have been sampled as part of the Phase I and/or II Release Characterization. Data from these two phases indicate significantly lower concentrations of these chemicals in downstream areas compared to the sediments of the Production area (with one anomalous point approximately one quarter of a mile downstream of Warwick Avenue). It is therefore recommended that analyses for chlorobenzene, toluene, and naphthalene, be performed only on sediment samples from the Production area and the area one quarter of a mile downstream of Warwick Avenue. OK?

OK ✓ 3) Collect Sediment Cores to a Depth of 20 Centimeters

Sediment cores were originally proposed to be sectioned into the following depth intervals:

0 - 5 cm
5 - 10 cm
10 - 20 cm
20 - 30 cm
30 - 40 cm

✓

The purpose of this layering was to provide guidance for the choice of depth intervals for the 3 sediment layers to be included in the water quality model. Subsequent to the design of the sampling program, a model of sediment transport in the study area of the Pawtuxet River was developed and calibrated. This model indicates that sedimentation rates in the river are low and that high-flow resuspension events affect only the top few centimeters of the sediment in most of the river. For these reasons we have chosen the top three layers as the depth intervals for the chemical fate model. We therefore

recommend that cores be collected to a depth of 20 centimeters and be sectioned as follows:

0 - 5 cm
5 - 10 cm
10 - 20 cm

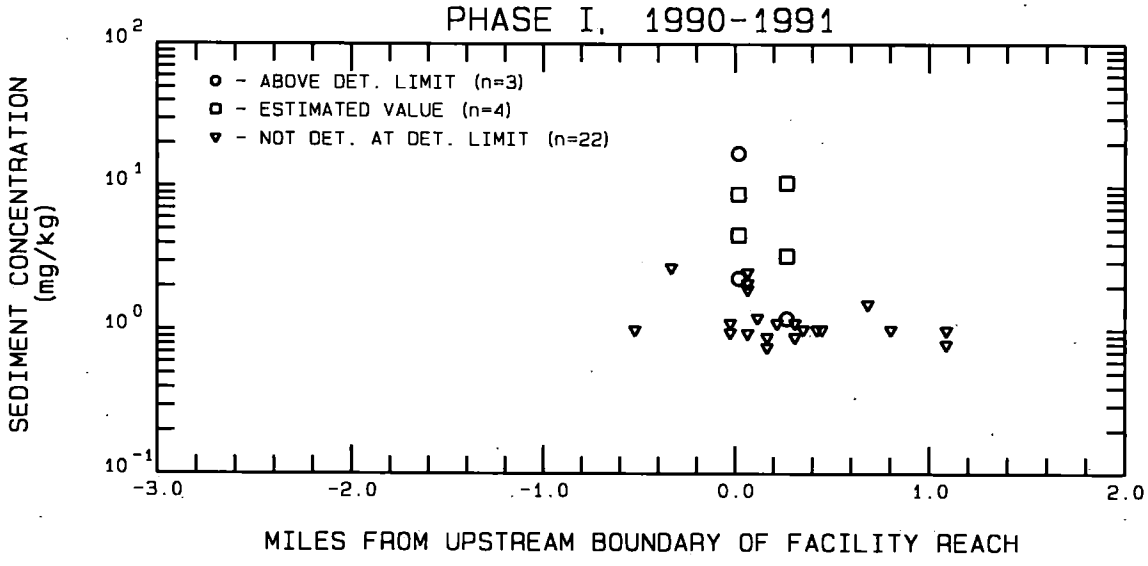
Very truly yours,

HYDROQUAL, INC.

Edward J. Garland

Edward J. Garland

EJG:smn
cc: Diane Leber
Mark Houlday



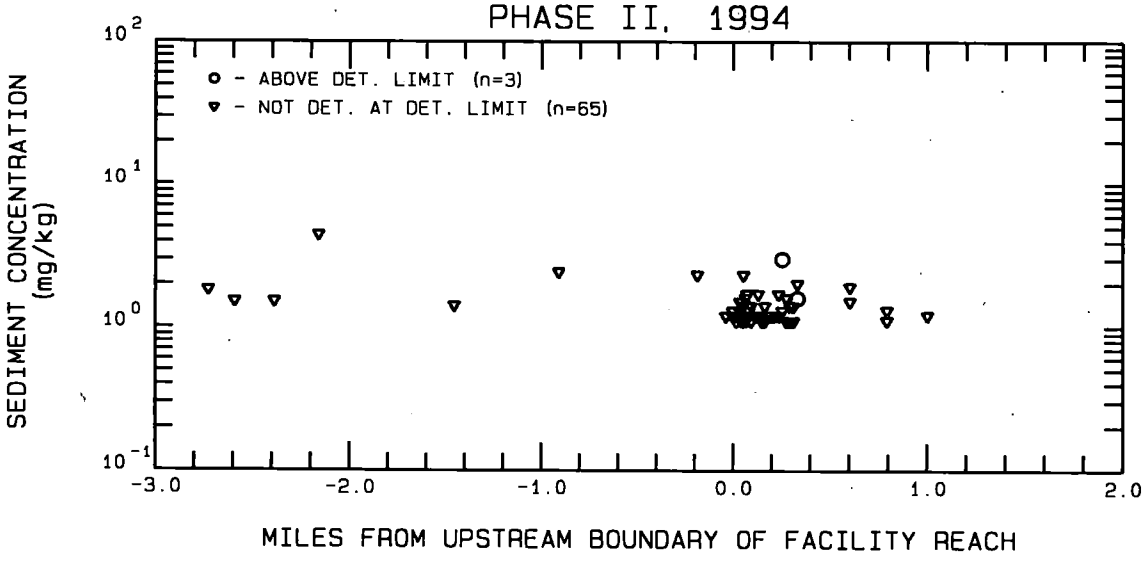


FIGURE 1. PAWTUXET RIVER SURFACIAL SEDIMENT SILVER DATA

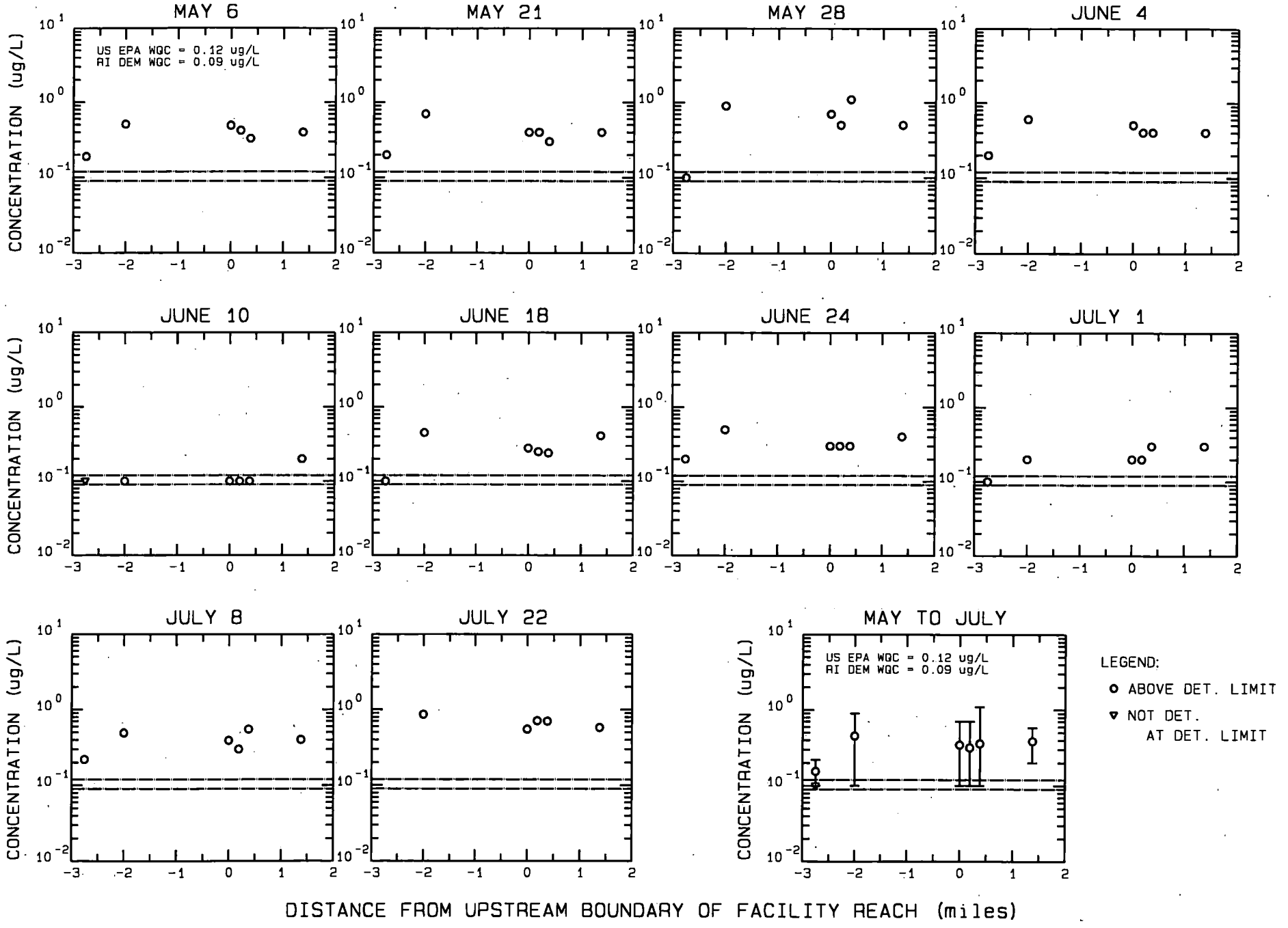


FIGURE 2. PAWTUXET RIVER PHASE II, WATER COLUMN SILVER DATA, 1992

RELEASE CHARACTERIZATION SAMPLING LOCATIONS

1 - Phase I
2 - Phase II

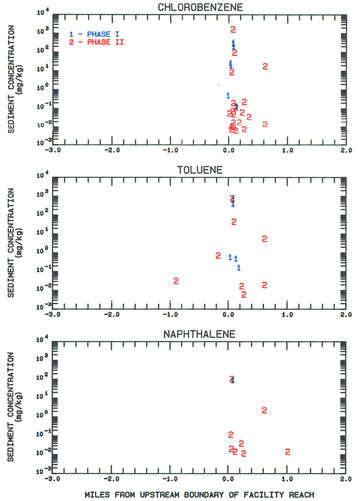
Cohesive Areas

Warwick Avenue Bridge

Facility Railroad Bridge

Facility Pedestrian Bridge

PAWTUXET RIVER RCRA SEDIMENT CHEMICAL DATA



Northing (ft)

247000
247500
248000
248500
249000
249500

Easting (ft)

521500
522000
522500
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523500
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